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R E P O R T
ON THE ATTACK OF EPIDEMIC
CHOLERA,
AT AGRA IN 1863,

BY

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Agra, 10th September 1863.

THE weather was clear, cool and bracing during the cold season, 1862-3, followed by a steady, hot, westerly wind, till the middle of June, when the rains set in. The fall of rain was unusually heavy, till the 22nd of August ; since then it has been clear and hot. There has been very little sickness amongst the Troops in the Agra and Gwalior Circle during the year ; and with the exception of Agra, there has been no epidemic Cholera. The disease has been of the same character as in former epidemics, appearing first in the Central Prison, and afterwards in Cantonments.

Last year the European Artillery were not affected, whilst the Infantry corps suffered severely. This year the Artillery have suffered severely, whilst the European Infantry, have been lightly affected. The Native Infantry have not been affected during the present year, and only very slightly during the previous attacks. The disease appeared to be confined to Agra and the vicinity, and did not spread over the country like a wave, as on previous occasions ; and there was a recurrence of the disease, in the Central Prison, after it had subsided, which had not taken place in former epidemics.

The natives, in the city of Agra, suffered considerably in the hot season, May and June, before the rains set in ; but the disease disappeared after the first fall of rain. This was the ordinary course of the disease in former days. It used to be considered a disease of the hot season, but it has been a rainy season disease, at least in Central India, for the last twelve years.

In April there were several cases in the city, in passengers who arrived from Allahabad by rail, but it did not spread from them.

Cholera appeared in the Central Prison on May 20th, and there were six cases during the following three days. These cases were immediately removed outside the Jail, and the whole of the wards and hospitals fumigated, by *smoky green-wood fires*, which were constantly kept burning until the disease disappeared. There was only one case after this, till three weeks after the rains had set in. It reappeared on the 7th July, on the 14th there were thirteen cases. It subsided from this date to the 18th, then there was only an occasional case, till the 1st August; and again on the 14th, when there were exacerbations for several days. There were 107 cases of Cholera and 48 of Diarrhœa, total 155, of these 43 proved fatal, being 1·91, per cent on the strength 2,245. There were eight women attacked, of these cases two proved—fatal.

The first case, in Cantonments, appeared in a Gunner of F. Battery 22nd Brigade, Royal Artillery, on the 21st July. This battery had suffered much from low fever, and been very sickly, since arriving at Agra, in April. The admissions from Diarrhœa continued numerous, with one case of Cholera each day. They were sent on the 27th to Secundra, and occupied the corridors of Akbar's Tomb. As a case appeared on that day in the Battery in the Fort, they were sent to Secundra on the following day. There is a large Convalescent Hospital for the Prisoners in some corridors, near the gateway of the Tomb. Their number had been increased to 300, at the time the cholera appeared in the Central Prison, and there had not been a single case of cholera amongst them, and I received a similar report regarding the surrounding villages. On the 28th, however, I received a report that there had been ten cases in the Orphanage, established for native children at Secundra, who were collected during the late famine. I also learnt that there had previously been one case on the 22nd, and another on the 26th. The attack continued severe in the Orphanage, until the children were removed. There were 74 cases, of which 29 proved fatal, which is 9·66 per cent on the strength of 300. There was no fresh case in the Artillery Detachment on the 28th, but on the 29th there were four cases, and they moved into tents on the Muttra road next day. The disease continued to appear though they changed ground. They were brought back and sent across the Jumna to the vicinity of Ram Bagh on the 4th August. *There was no fresh case after crossing the river.* They changed ground every second or third day, and returned to Cantonments on the 17th and 18th of August. Amongst the men of the Artillery Division there were 18 cases of cholera and 73 of Diarrhœa, total 91, of these 11 proved fatal, which forms 5·39 per cent on the

strength of 250. One woman, who was attending on her husband, who died from the disease, was attacked on 6th August, and died.

There had been a few suspicious cases of Diarrhœa in the 23rd Fusiliers, towards the end of July ; on the 30th, there were six cases of cholera. On the following day two companies were moved across the river, to tents that had been previously pitched, in the vicinity of Ram Bagh ; and one company was moved into the Fort, on duty, to be relieved daily. Another Detachment of three companies was sent across the river on the 7th August, as occasional cases continued to appear in Cantonments. These camps changed ground every second or third day. *There was not a single case in either of these Detachments after crossing the river.* It was intended to send them by Rail to Allyghur and Etawah if the disease continued—leaving the sick behind—but this change was not required. There were only three more cases in Cantonments, of which the last occurred on the 18th August. The Detachment returned to Cantonments on the 27th. When in camp the men were very healthy with good spirits, and improved appetite. There were amongst the men 14 cases of cholera and 73 of Diarrhœa, total 87, of these 10 proved fatal, equal to 1·09 per cent on the strength of 911. Amongst the women there were two cases of cholera, both of which proved fatal.

There was no case of cholera in the 24th Regiment, Punjab Native Infantry.

The mortality during the present attack amongst the European soldiers has been 21. Last year, 1862, it was 50. In 1861 it was 66, and in 1860 it was 59. The favorable result this year, may be connected with the Troops having promptly moved into camp, with frequent changes of ground, and to the free use of smoky fumigations. It may be hoped that the virulence of the attack, which is assuming an endemic appearance of late years, is becoming less intense.

At Muttra there was one case in the 21st Hussars on the 17th, and two on the 21st August. They all recovered. Tents were pitched for half the corps, but as there were no more cases they were not occupied.

The symptoms of the disease were similar to those of former years, viz: light coloured Diarrhœa with scanty urine, lasting for several days, or for a few hours, followed by purging and vomiting of a congee fluid, cold perspiration, cramps, livid collapse, and suppression of urine. These symptoms had occasionally a periodical type. When reaction took place, the evacuations changed in colour, the pulse returned, the skin became

warm, and less leaden coloured, the urine reappeared and the vomiting subsided. In favorable cases strength was slowly regained ; in others a low typhoid fever, with delirium followed, under which the patients sunk. Six of the patients in Hospital and two of the men attached to the 23rd Hospital suffered. The woman in the Artillery who died had been in attendance on her husband, who died from cholera. None of the Native Champooers or native servants attached to the hospitals were affected. There was an interesting case in Cantonments, of immunity from exposure, in Mr. Webb's child, whose wet nurse was affected with Diarrhœa for two days, when collapse supervened and she died. During the attack of 1856, a female prisoner in the Central Prison was nursing, when she was attacked and died. In both instances the children were nursed, till collapse supervened, and in neither instance was the child affected by the disease. The cases in this year's attack would illustrate either the contagious, or non-contagious nature of the disease, whilst the exemption of the camp after crossing the river, would indicate a *local* origin. Negative results are not convincing. The exemption of the *Native* troops and hospital attendants, whilst the *Europeans* suffered in the Hospital and in the Cantonments generally, is against the *local* origin of the disease, and the exemption of the *camps* may have arisen from no case of the disease being taken across, from which it could spread. These Europeans would not have suffered had they not been in Cantonments, and no one would have been surprised if the children had been affected.

There is a peculiar odour from the evacuations of collapsed cases, which must be inhaled by all who remain in their vicinity. That this does not invariably induce similar symptoms, is equally true, but that they frequently appear, after such exposure, in debilitated or depressed individuals, or those suffering from bowel complaint, or the action of strong purgatives, is equally the result of experience. The explanation of the Phenomena may differ, without questioning the facts.

The poison may emanate from the locality unconnected with the individual, or it may emanate from the individual, and require a certain state of the locality, for dissemination or growth ; or it may when communicated or absorbed, be again eliminated from the system, by the *vis medicatrix nature* by the purifying organs of the system, without producing characteristic symptoms, in the same manner as small doses of poisons are thrown off, by healthy persons.

If the disease be communicated from the evacuations, it is important to determine at what stage this property becomes

developed. The peculiar odour is palpable, in the congee evacuations. If the poison be eliminated from the system by diarrhœa, it must be in these evacuations, and liable to be disseminated from them. If reaction has taken place, and a low typhoid fever followed, I have not observed that the fever, or choleraic symptoms, are communicable.

If the disease be considered contagious, the remedial measures employed will cause much inconvenience and trouble, but if it be treated as non-contagious, whilst it has the property of being communicated, the lives of many will be sacrificed, which would be avoided, if it were not considered to be contagious. If it were a doubtful question, humanity would indicate the adoption of the safest mode of treatment.

After thirty-two years' observation of Epidemic Cholera, I have no doubt that it is *contagious*, under certain circumstances. This has guided the treatment that I have pursued in the present, as in former epidemics. The general rules for treatment are,—

1st.—The separation of the affected.

2nd.—The removal of the healthy from the contaminated ground.

3rd.—The early exhibition of remedies ; with Quinine in the rainy season.

4th.—The use of disinfectants, particularly newly made charcoal in the shape of smoke.

5th.—The strictest attention to diet, cleanliness, and ventilation.

6th.—The employment of Native Champooers to wait on the sick.

In camp there should be three hospital tents, one for the general sick, one for the Diarrhœa cases, and one for the collapsed cases. The Diarrhœa which prevails, during an attack of Epidemic Cholera, is not found at other seasons. To call it ordinary *looseness* tends to make the men careless, during the remediable stage of the disease. To call it the early stage of cholera, makes them apply at once for treatment. This may cause some alarm, at the beginning of the epidemic, particularly to ladies and nervous people ; but it leads to good practical results. They do not neglect the warning : and they are not so hopelessly prostrate, in spirit, when collapse supervenes.

In reference to the individual remedies used this season, during the stage of *collapse*, considerable advantage appeared to arise, from the free use of a solution of salt and soda—particularly in the Jail. It relieved the thirst and burning pain in the pericordium ; and though freely vomited, it was not injurious. It appeared to act as a stimulant. The breathing

was quicker, after vomiting, and the eye brighter, with a desire for more of the solution. In the worst cases there was no vomiting. It assisted reaction without inducing unfavourable symptoms; but the secretions of the Liver and Kidneys were not always restored and these cases died. *Alcoholic* stimuli were very sparingly given. Their action is chiefly on the brain, and the head symptoms prove most dangerous, when reaction takes place, where they have been freely used. The after effects of *chloroform* or *chlorodine* are of a similar character, though their immediate action, in relieving the vomiting and cramps, is likely to recommend their use.

The *wet sheet* was tried in eight cases amongst the Europeans, and two of the Prisoners. It appeared to restore warmth to the skin, and to soothe the patient; but the secretions were not restored, nor life prolonged. Only one of these cases recovered. Dashing *iced water* over the chest, appeared to stimulate the respiration, with temporary benefit. The ordinary remedies were used, with similar effects, to those stated in former reports.

As a prophylactic *Quinine* was given regularly every morning, with advantage. *Smoky green-wood* fires were generally burnt. The smoke pinched the eyes occasionally; but it sweetened the air, by absorbing impure gases, and carrying them off by ventilation; besides, the fires helped to dry the barracks. *Change of ground* formed an essential part of the treatment. The disease continued after the Artillery went into camp on the Muttra road; but there was not a single case amongst them, after crossing the Jumna. In H. M.'s 1-23 R. W. Fusiliers, the disease appeared on the 30th July, and next day 200 of them crossed the river. On the 7th August, I received the report at the hospital, of there having been eight cases of Diarrhœa in one company. It was moved across the river that afternoon, and two more companies followed next morning. *There was not a single case in either of these Camps.* They changed ground every second or third day. The men slept on cots, and smoky fires were burnt, to the windward of the tents. During the Epidemic in 1856, the 3rd European Regiment was sent across the river, in the same direction; but they suffered severely, from sunstroke, and a continuance of the cholera. Their tents were late in reaching the ground, and the cots were not used. I attribute the favorable result during the present attack to the prompt and efficient manner, in which these changes were carried out by Brigadier J. Maepherson, C. B., and the comforts of the men attended to by Colonel Wells, C. B. and the officers in command of the camps.

The accompanying Tables Nos. 1, and 2, show the daily pro-

gress of the disease in each corps, the meteorological changes, the ozone, and fall of rain.

No. 3 is the monthly abstract from each corps.

No. 4 is a general abstract, showing the place where they were attacked, the date of the first and last cases, and of their moving into camp.

No. 5 is a general abstract of the various attacks at Agra, since 1857.

The professional skill and active zeal of Surgeon Major P. S. Laing, H. M.'s 23rd R. W. Fusiliers, and of Dr. C. Plank, Superintendent of the Central Prison, were most praiseworthy. The care and attention of Assistant Surgeons F. A. Turton, and F. J. MacCarthy, H. M.'s 23rd R. W. F. Assistant Surgeon J. H. Hensman, Artillery Division, in charge of the camps and Dr. A. Chistison, in the Fort, were highly valuable. The comforts of the sick men were carefully attended to by Mr. Steward Roderick, and Assistant Apothecary J. Forsyth, 23rd Regiment, and Mr. Apothecary J. Winn, and Assistant Apothecary R. Johnson, of the Artillery Division. Appended is a report forwarded to His Excellency the Commander-in-Chief, on the conclusion of the regular reports, which involved the movements of the Troops.

JOHN MURRAY, M. D.,

Deputy Inspector General of Hospitals, Agra Circle.

A P P E N D I X .

No. 153.

To

COLONEL E. HAYTHORNE,

Adjutant General of the Army,

SIMLA.

SIR,

I HAVE the honor to report, for the information of His Excellency the Commander-in-Chief, the progress of the attack of Epidemic Cholera at Agra ; and the means adopted to guard the Troops from the disease.

2nd.—The first appearance of the disease was on the 7th July, in the Central Prison, situated four miles to the north of Cantonments.

3rd.—In Cantonments it appeared in the Artillery Division on the 21st July, and in Her Majesty's 1-23rd Royal Welch Fusiliers, on the 30th July. The Artillery had been sickly ; but the Fusiliers had been very free from disease, during the previous cold and hot season.

4th.—On the appearance of Cholera, in the Central Prison, charcoal and green-wood fires were burnt in the barracks, and hospitals in Cantonments. The strictest attention was paid to the Conservancy and Sanatory arrangements. Tents for 200 men were pitched, on the opposite side of the river, on high ground in the vicinity of the Railway station. It was intended if the disease continued to forward the healthy men to Allyghur, and Etawah by rail, leaving those affected. By this means the men who were affected before leaving Cantonments would be separated, and the probability of the disease spreading, in the new ground be diminished.

5th.—On the 27th July, F. Battery 22nd Brigade Royal Artillery, moved to the corridor in Akbar's Tomb at Secundra, and on the 28th No. 5 Battery 25th Brigade Royal Artillery, followed. The disease continued, and they moved into tents on the 30th, on the Muttra road, and changed ground on the 2nd August. The disease still appearing, they were recalled and sent across the river Jumna on the 4th. There was no fresh case after crossing the river. The camp changed ground every second or third day, and returned to Cantoments on the 18th and 19th August.

6th.—On the 30th July, there were six cases in Her Majesty's 1-23rd Royal Welch Fusiliers ; two Companies moved next day across the river to the tents, near the railway, and one Company was sent on duty to the Fort, to be relieved daily. There was no case of cholera in this Detachment nor in the second Detachment of three Companies, which followed on the 7th, in consequence of the attack continuing in Cantonments. They were only three severe cases in Cantonments after this date. The Detachments returned from camp on the 27th August ; and there has been no case since.

7th.—In the Artillery Division, there were 18 cases of cholera, and 73 of Choleraic Diarrhœa, amongst the

Officers,	...	6
Men,	...	195
Women,	..	17
Children,	..	21
Total,	...	257

men, total 91, of which 11 proved fatal. One woman who had been attending on her husband, who died from the disease, was attacked next day and died, one child died from Diarrhœa.

8th.—In Her Majesty's 1-23rd Royal Welch Fusiliers, there were 14 cases of cholera, and 73 of Choleraic Diarrhœa amongst the men, total 87, of which 10 proved fatal. Two women were attacked and died. One child died from Diarrhœa.

Officers,	...	23
Men,	...	910
Women,	...	41
Children,	...	65
Total,	...	1,039

9th.—There was not a single case in Her Majesty's 24th Punjaub Native Infantry.

10th.—In the Central Prison there were 99 cases of Cholera, and 45 of Choleraic Diarrhœa amongst the men, total 144, of which 38 proved fatal. There were eight cases of Cholera amongst the women, of which two proved fatal.

11th.—The small mortality from the present attack, is highly satisfactory, and in a great measure attributable to the prompt and efficient manner in which the instructions contained in G. O. C. C., dated 7th April and 22nd June of 1862, for troops being moved into camp, and their wants provided for, were carried out. The zeal, skill and unremitting attention to the comforts of the sick of Surgeon-Major P. S. Laing, Her Majesty's 1-23rd Royal Welch Fusiliers, were most praiseworthy. Assistant Surgeon F. A. Turton, and F. J. McCarthy, Her Majesty's 1-23rd Royal Welch Fusiliers were very zealous and attentive in hospital, and in charge of the Rambaug Camps. Staff Assistant Surgeon J. H. Hensman, was zealous and attentive to the comfort of the sick, in the Artillery Camp, in the vicinity of Secundra, and when they crossed the Jumna. The

services of Assistant Surgeon A. Christison, M. D., Superintendent of Vaccination, were highly valuable in the Artillery Hospital, and in the Fort. Doctor Laing, reports favorably, and deservedly, of the services of Mr. Steward E. G. Roderick, and Assistant Apothecary J. Forsyth; Mr. Apothecary J. Winn, and Assistant Apothecary R. Johnson, were very attentive in the hospital and corps of the Artillery Division. The Chamberpooers were very useful and attentive, they relieved the Europeans from a dangerous duty, none of them, nor of the Native Hospital attendants were attacked.

12th.—There were three suspicious cases in Her Majesty's 21st Hussars at Muttra; but none advanced to the stage of collapse. This favorable result may be attributed to the prompt treatment employed by Surgeon J. T. C. Ross, Her Majesty's 21st Hussars, and to the careful attention to the sanatory state of the lines.

I have, &c.,

(Sd.) JOHN MURRAY, M. D.,

Dy. Insp. General of Hospitals, Agra Circle,

DEPUTY INSPECTOR GENERAL'S OFFICE, AGRA, }
1st September 1863. }

In submitting this report, I take the opportunity of stating how much we are all indebted to Colonel Wells, C. B., Commanding the 1-23rd Royal Welch Fusiliers, for the admirable example he set to both men and officers. His constant visits to his Hospital, and his entire devotion to the interests and well-being of his men, has been such, that there is, I believe, nothing they would not do for him.

(Sd.) J. D. MACPHERSON, *Brigadier,*

Commanding Agra Brigade.